REMARKS/ARGUMENTS

The amendments set out above and the following remarks are responsive to the points raised by the Office Action dated December 14, 2007. In view of the amendments set out above and the following remarks, reconsideration is respectfully requested.

Pending Claims

Claim 9 is amended, and claims 29-34 are added, so that claims 1-34 are pending. No new matter is added, and support for the amended claim language may be found within the original specification, claims, and drawings. Claim 9 is supported at, for example, page 4, line 13 of the specification. New claims 29-34 are supported at, for example, page 3, line 28 to page 4, line 4 of the specification.

The Office Action

Claims 1-13, 20, 22, and 24-28 were rejected under 35 U.S.C. § 103 as unpatentable over U.S. Patent No. 5,352,507 to Bresson et al. (hereinafter, "Bresson") in view of U.S. Patent No. 6,703,095 to Busshoff et al. (hereinafter, "Busshoff") and U.S. Patent No. 5,347,927 to Berna et al. (hereinafter, "Berna").

Claims 14-19 were rejected under § 103 as unpatentable over Bresson in view of Busshoff and Berna as applied to claims 1 and 2, and further in view of U.S. Patent No. 5,754,931 to Castelli et al. (hereinafter, "Castelli").

Claim 21 was rejected under § 103 as unpatentable over Bresson in view of Busshoff and Berna as applied to claims 1 and 2 above, and further in view of U.S. Patent No. 6,699,419 to Kia et al. (hereinafter, "Kia").

Claim 23 was rejected under § 103 as unpatentable over Bresson in view of Busshoff and Berna as applied to claims 1 and 2 above, and further in view of U.S. Patent Publication No. 2002/0182328 to Asai et al. (hereinafter, "Asai").

Each of these rejections is separately and respectfully traversed.

Independent claims 1, 29, and 32 define a printing sleeve comprising, *inter alia*, a circumferential stiffening layer, wherein the circumferential stiffening layer has a thickness not exceeding 0.5 mm and a Young's modulus in the circumferential direction of at least 400 MPa, and wherein the stiffening layer is capable of undergoing a deviation of 100 to 500 microns without fracture. Independent claim 28 defines a printing sleeve comprising, *inter alia*, circumferential reinforcing composite material, wherein the circumferential reinforcing composite material has a thickness between 0.2-0.5 mm and a Young's modulus in the circumferential direction between 400-100,000 MPa. Claim 29 further defines the circumferential stiffening layer as comprising a matrix comprising a material selected from the group consisting of polyolefin, polyamide, and polyester. Claim 32 further defines the circumferential stiffening layer as comprising a matrix comprising a material selected from the group consisting of epoxy, polyurethane, acrylate, and polyester.

The obviousness rejection based on Bresson in view of Busshoff and Berna cannot be maintained. It would be necessary to harden the elastomer of layer 5 of Bresson considerably in order to achieve a modulus in a circumferential direction of 200 megapascals that is taught by Bresson (col. 6, lines 5-6). For the reasons explained in more detail below, one of ordinary skill in the art would not be motivated to modify the elastomer layer of Bresson to have a Young's modulus of at least 400 MPa, as claimed, because dramatically hardening the elastomer layer 5 of Bresson would cause the layer 5 to become brittle and susceptible to cracking under deflection.

Bresson teaches a printing blanket that includes an outer printing surface layer, at least one elastomer layer, and a resiliently compressible layer beneath the elastomer layer (col. 2, lines 30-33). Bresson teaches that the reinforced elastomer layers include polymeric materials which are considered curable or vulcanizable, i.e., they can be hardened or cured by the application of heat, radiation, curing agents, or other known means. Bresson gives examples of such materials including natural rubbers, fluoroelastomers, SBRs (styrene butadiene rubber), EPDM (ethylene-propylene non-conjugated diene terpolymers), butyl rubbers, neoprenes, nitrile rubbers such as NBRs (nitrile butadiene rubber), polyurethanes, epichlorohydrins, chloroprenes, etc., or a mixture of the foregoing. Bresson further teaches that *nitrile rubber* is preferred (col. 6, lines 7-18).

Exhibit A (Kraiburg, "Typical Characteristics of Vulcanized Rubbers," 2005, available on the internet at http://www.kraiburg.cn/site/fileadmin/brochures/Polymerubersicht-Eng.pdf) (attached) shows the typical characteristics of vulcanized rubbers, as understood by one of ordinary skill in the art. Exhibit A shows that Shore A hardness of different elastomers varies from 20 to 98, and that nitrile rubber has a Shore A hardness of 30-95.

Exhibit B (available on the internet at http://www.allsealsinc.com/allseals/Orings/or13.htm, 2003) shows a curve giving the International Rubber Hardness Degrees (IHRD) v. Young's Modulus (M) (page 3, 2d graph), as understood by one of ordinary skill in the art. When Log 10 M (M in psi) is 3.9 (i.e., a modulus of at least 55 MPa), the IHRD approaches the highest value of 100. Therefore, one of ordinary skill in the art would understand that, according to the trend shown in Exhibit B, the value of 200 MPa obtained by Bresson provides the highest value of hardness.

Figure 4 of Exhibit C (Hertz et al. "Theory and Practice of Vulcanization," *Elastomerics,* Nov. 1984) shows a graph depicting vulcanizate properties v. crosslink density, as understood by one of ordinary skill in the art. Figure 4 shows that modulus and hardness values increase as crosslink density increases. However, one of ordinary skill in the art would also understand that tear strength, fatigue life toughness, and tensile strength increase to a maximum as crosslink density increases, and then dramatically decrease as crosslink density continues to increase, as shown in Figure 4. Thus, Figure 4 shows that for high modulus or hardness values, tear strength, fatigue life toughness, and tensile strength are very low.

Thus, based on the teachings of Exhibits A-C, one of ordinary skill in the art would not be motivated to increase the modulus of the reinforced elastomer layer of Bresson beyond 200 MPa because of the danger of fracture. The blanket of Bresson presents the problem that the elastomer layer under the printing layer is unable to have a thickness not exceeding 0.5 mm, a modulus greater than 400 MPa, and, at the same time, be capable of undergoing a deviation of 100 to 500 microns, without fracture, as claimed. The claimed printing blanket, on the other hand, advantageously has a thickness not exceeding 0.5 mm, a modulus greater than 400 MPa, and is also capable of undergoing a deviation of 100 to 500 microns without fracture.

One of ordinary skill in the art would not combine Berna with Bresson because Berna teaches a printing element having layers made of a completely different structure than Bresson. Berna tries to improve the printing blanket of Bresson, which employed a stabilizing hard elastomer between the printing and foam layers (Berna, col. 1, lines 42-44). Berna teaches using a "spirally integrated" reinforced compressible layer *instead of* using separate compressible layers and reinforcing layers formed into *concentric* tubes. Accordingly, Berna teaches a solution that is *completely opposite* the concentric layers of Bresson. Even if the superposed elastomer layers providing the "spirally-integrated" structure of Berna would successfully reduce a deviation caused by the nip in each layer, the "spirally-integrated" structure would still have the disadvantage of increasing the thickness of the sleeve, in contrast to the claimed, thin printing sleeve. The teachings of Berna fail to suggest that the three-layer structure of Bresson can achieve the claimed deviation without fracture with only one reinforcing layer in view of the high fatigue associated with the high modulus that is inherent to elastomer layers.

One of ordinary skill in the art would not turn to Busshoff to modify Berna and Bresson. Berna and Bresson fail to solve the problem of providing a thin, reinforced layer under the printing layer with a high modulus in the circumferential direction which is, at the same time, capable of undergoing a deviation to accommodate the nip of the cylinders. For that reason, the reinforced layer must be on a compressible layer. One of ordinary skill in the art would not modify Bresson and Berna in view of the thin base sleeve (12) of Busshoff because the thin base sleeve of Busshoff is in close contact with the supporting cylinder, and therefore, does not undergo any deviation. Busshoff clearly does not teach any layer or thin sleeve undergoing a deviation of 100 to 500 microns, as claimed. A sleeve that does not deviate does not render a layer that can undergo a deviation of 100 to 500 microns without fracture obvious.

For the reasons set forth above, the present claims are not obvious over the combination of Bresson, Berna, and Busshoff.

Since the independent claims are allowable for the reasons set forth above, the dependent claims are also allowable because they depend from allowable independent claims.

Conclusion

Applicants respectfully submit that the patent application is in condition for allowance. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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